NEW CLAIMS

16. An apparatus improving the arrangement of and spatial relationship between the functional elements of a row crop harvester attachment or header unit for mounting on and co-acting with the functional elements of a mobile threshing unit, wherein the functional elements include:

i. a row crop harvester having a main frame attachment mounted to a mobile harvesting threshing unit;

ii. a first conveyor system in said row crop harvester including a power source, said power source connected to a plurality of row units mounted on said main frame for removing grain from the stalks and conveying the material including grain up a first inclined plane to exits from said first conveyor system;

iii. a second conveyor system at right angles to said first conveyor system, said second conveyor system comprises a power source for receiving the harvested material from the exits of said first conveyor system, an auger with flighting and a curved trough containing said auger;

iv. said auger cooperating with said curved trough to convey said harvest material from the exits of said first conveyor system to an area at the center of the plurality of row units for exit from said second conveyor system;

v. a third conveyor system including a power source in said mobile threshing unit for retrieving material in said open area and delivering the material to the thresher mechanism,

vi. said second conveyor system connected to said third conveyor system by an open area between the exit of the second conveyor system and the entrance of the mobile threshing unit; wherein the improvement is comprised of:

a. a section of said second conveyor auger trough, located at the center of the row units and being substantially the same width as the entrance to

the third conveyor system, wherein the auger trough surface is substantially flat from the center of the auger trough through the exit of said second conveyor system to the entrance of said third conveyor system; and,

b. a vertical spacer inserted between the harvester row crop attachment and the mobile threshing unit to reduce the difference in height between the entrance of said third conveyor system and the height of the second conveyor system so that the angle of incline plane between the second and third conveyor systems is reduced allowing the second conveyor system and the entrance to the third conveyor system to operate in substantially the same horizontal plane.

17. The apparatus in accordance with claim 16, wherein said auger flighting is reversed on opposite sides of the centerline of said auger.

18. The apparatus in accordance with claim 16, wherein said first and second conveyor systems are moved vertically upward in relation to said third conveyor system an amount sufficient to reduce the angle of the horizontal plane from said second conveyer system exit to the entrance of said third conveyor system.

19. The apparatus in accordance with claim 16, wherein a feeder plate is attached to said second conveyor system for bridging between said second conveyor system and said third conveyor system.

20. The apparatus in accordance with claim 19, wherein said feeder plate is made of elastomeric material to allow movement between said second and third conveyor systems while maintaining the connection between said second and third conveyor systems.

21. The apparatus in accordance with claim 16, wherein the lateral distance between the second and third conveyor systems is reduced by moving laterally the connection of the header unit relative to the mobile threshing unit and thereby reducing the angle of the inclined planes.

22. The apparatus in accordance with claim 21, wherein said lateral movement between said first and second conveyor system and said third conveyor system is by a lateral spacer.

23. The apparatus in accordance with claim 22, wherein the lateral spacer is rectangular in shape.

24. The apparatus in accordance with claim 21, wherein the lateral spacer is a trapezoidal piece between the header unit and the threshing unit.

25. A method to improve the arrangement of and spatial relationship between the functional elements of a row crop harvester attachment or header unit for mounting on and co-acting with the functional elements of a mobile threshing unit, wherein the functional elements include:

(i) a row crop harvester having a main frame attachment mounted to a mobile harvesting threshing unit;

(ii) a first conveyor system in said row crop harvester including a power source, said power source connected to a plurality of row units mounted on said main frame for removing grain from the stalks and conveying the material including grain up a first inclined plane to exits from said first conveyor system;

(iii) a second conveyor system, at right angles to said first conveyor system, including a power source for receiving the harvested material from the exits of said first conveyor system, said second conveyor system cooperating with and above a curved auger trough surface;

(iv) said second conveyor system conveying said material from the exits of said first conveyor system to an area at the center of the plurality of row units for exit from said second conveyor system;

(v) an open area between the exit of the second conveyor system and the entrance of the mobile threshing unit connecting said second conveyor system and mobile threshing unit;

(vi) a third conveyor system, including a power source, in said mobile threshing unit for retrieving material in said open area and delivering the material to the thresher mechanism, wherein the improved method is comprised of:

(a) reducing the curvature of said auger trough from the mid-point of the circumference of said auger trough to the exit of the second conveyor system, the width of the area with reduced curvature substantially equal to the width of the entrance to the third conveyor system; and,

(b) lowering the height of the entrance to the third conveyor system in relation to the height of said second conveyor system to reduce the angle of the inclined plane surface from said second conveyor system to said third conveyor system.

26. The method of claim 25, wherein a feeder plate is attached to said second conveyor system for bridging between said second conveyor system and said third conveyor system to reduce the distance and incline plane between said second and third conveyor systems and prevent the build-up of harvested material between said conveyor systems.